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Section II (Remarks)

A. Summary of Amendment to the Claims

By the present Amendment, claim 1 has been amended. No claims have been cancelled or added. Claims 15, 40, and 48 were previously cancelled. Claims 2-9, 11-14, 26, 31-39, 41-47 have been withdrawn from consideration pursuant to a restriction requirement. No new matter within the meaning of 35 U.S.C. §132(a) has been introduced by the foregoing amendment.

The amendments made in claim 1 herein are fully consistent with and supported by the originally-filed disclosure of this application and particularly, the storage vessel illustrated in Figures 1-5, 7, 8 and 12, showing the containment aspect of the vessel, which does not entail any flow-through of the storage media.

B. Rejection of Claims Under 35 USC §102

In the June 5, 2007 Office Action, the examiner rejected claims 1,10 and 16 under 35 USC §102(b) as being anticipated by Kuespert (US Patent 6,228,146).

This application is directed to a storage and dispensing system for storing and dispensing target gas from a housing containing a plurality of microtubular elements arranged so that the bore side is sealed from the shell side, with one of such sides being in contact with a carrier material for the target gas, and the target gas, e.g., hydrogen, being stored on such side of the microtubular element in a storage material such as a target gas sorbent, e.g., sodium borohydride in the case of hydrogen.

Kuespert utilizes membrane separation of natural gas from liquid in a subterranean geological formation, in which the gas is mixed with brine. The Kuespert system includes a casing with pores over its surface through which the gas/brine mixture enters the casing and passes through permeation tubes in the casing to recover the gas. The gas then is flowed from the casing through a tube communicating with the surface.

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The Kuespert apparatus is a "flow-through" device that is not designed to hold a target gas, but rather to extract it as quickly as possible in the subterranean formation.

The non-flow-through character of the storage and dispensing system now recited in claim 1, as amended, clearly distinguishes from Kuespert. Claim 1 as amended herein recites

- "...(a) a housing for containment of carrier material for the target gas, adapted to hold a volume of said carrier material in isolation from an exterior environment of the housing;
- (b) a plurality of microtubular elements disposed in said housing, wherein each of said microtubular elements comprises a tubular wall defining a bore side and a shell side, and wherein the bore side of each of said microtubular elements is sealed from the shell side thereof; and
- (c) a carrier material for storing said target gas, wherein said carrier material is disposed in and stored said housing in isolation from the exterior environment of said housing and at either the bore sides or the shell sides of said microtubular elements.

No such structure is present in Kuespert.

It therefore is requested that the rejection of claims 1, 10 and 16 based on Kuespert be withdrawn.

C. Rejections of Claims Under 35 USC §103

In the June 5, 2007 Office Action, the Examiner also rejected claims 1, 10, 16-20, 22-25, 27 and 28 under 35 USC §103(a), as being unpatentable over Amendola, et al. (US Patent 6,534,033) in view of Kuespert. Claim 21 was rejected under 35 USC §103(a) as being unpatentable over Amendola in view of Kuespert, as above and further in view of Henis et al (US 4230463). Claims 29, 30, 49, and 50 were rejected as being unpatentable over Amendola and Kuespert in view of Hockaday et al (US 2001/0045364).

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Concerning the combination of Kuespert and Amendola, Amendola uses a U-shaped manometric-type reservoir, in which the liquid level of a borohydride based solution is dependent on the amount of hydrogen released from such solution, which changes the level in a leg of the U-shaped tube to vary the contact of the borohydride solution with a catalyst tube. The catalyst tube is made out of stainless steel screen, as described at column 13, line 53 of Amendola.

The large screen tube in Amendola is immersed in the borohydride solution and gas will be generated that will act to depress the borohydride solution interface in the leg of the reservoir in which the catalyst is disposed. Such lowering of the liquid level in the catalyst-containing side of the reservoir will result in rising of the interface in the other leg of the reservoir connected to the catalyst-containing leg. The Amendola arrangement thus relies on a freely moving gas/liquid interface that is unimpeded by any flow obstruction or restriction. The catalyst-containing leg of the reservoir is an open channel allowing disengagement of the gas from the liquid as it (the gas) is generated.

Any flow restriction or impedance would defeat the objective of Amendola to release the hydrogen gas freely from the liquid.

Accordingly, there is no reason that one would seek to employ the permeation tubes of Kuespert in Amendola, since the fundamental purpose of Amendola would be frustrated. Further, Kuespert utilizes a perforated housing so that brine/gas can flow into the housing, while Amendola utilizes a containment reservoir in which the sodium borohydride and hydrogen do not freely flow from and into the surrounding ambient environment.

The Examiner has stated that it would be obvious to modify Amendola to include microtubular elements, in order to utilize a gas recovery device that more efficiently separates gas from a liquid carrier material. In fact, placing permeation tubes from Kuespert into the reservoir of Amendola would reduce the efficiency of gas separation from the liquid carrier material, since Amendola generates hydrogen, which then simply bubbles to the surface of the borohydride solution and is released immediately to the head space in the reservoir.

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Importing the permeation tubes of Kuespert would not allow the liquid level in the legs of the U-shaped reservoir to freely adjust in relation to one another, as is taught to be necessary by Amendola to achieve a self-regulating hydrogen generator. (See column 13, lines 41-61 of Amendola).

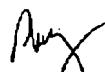
The tertiary references to Henis and Hockaday fail to cure the deficiencies noted in the Amendola and Kuespert combination.

It therefore is requested that the rejection of claims 1, 10, 16-25, 27-30 and 49-50 under 35 USC 103 (a) be withdrawn.

CONCLUSION

Based on the foregoing, all of Applicants' pending claims 1, 10, 16-25, 27-30, 49 and 50 patentably distinguish over the art, and are in form and condition for allowance. The Examiner is requested to favorably consider the foregoing, and to responsive issue a Notice of Allowance. If any issues require further resolution, the examiner is requested to contact the undersigned attorney at (919) 419-9350 to discuss same, in order that a patent may be issued on the present application at an early date.

Respectfully submitted,



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